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phytol group is displaced by the ethyl group and the ethyl derivatives crystallize out. With methyl alcohol the crystals are the methyl derivatives. WILLSTÄTTER speaks of the native green pigments as phytylchlorophillids. On the same basis the ethyl derivatives are ethylchlorophillids. The displacement of the phytol by the ethyl group is hastened by an esterase (chlorophyllase). The phytyl derivatives are amorphous, while the ethyl and methyl derivatives are crystalline. The constitution of the green crystals given with ketones, esters, and aldehydes is unknown.—WM. CROCKER.

Silver leaf.—GÜSSOW[12] reports that the peculiar disease known as "silver leaf" is common on fruit trees in Canada. This disease has been recognized and has received distinctive names in several European countries. Its chief symptom, as its name indicates, is a silvery appearance of the leaves which is brought about by the separation of the epidermis from the palisade cells and the consequent filling of the resulting space with air. The wood of the diseased trees is browned and contains mycelium. After the death of the affected trees, fruit bodies of *Stereum purpureum* develop on the trunks and branches. This fungus has been shown by PERCIVAL, PICKERING, and others to be causally associated with the disease. The observations of these investigators are confirmed by GÜSSOW'S experiments in Canada, where in many cases he was able to produce the disease in 100 per cent of the inoculated trees. He also found that scions grafted on diseased trees soon became infected. In all cases the wood is infected with the mycelium of *Stereum purpureum*, but the most striking feature of the disease is the total absence of the mycelium from the diseased leaves. The mode in which the separation of the epidermis from the underlying tissue is brought about by the fungus was not determined. The disease appears to furnish an example of physiological effects wrought by the action of the mycelium on parts of the host not actually invaded. Such phenomena, where the effects cannot be traced to mere mechanical injury, are practically unknown in the field of plant pathology.—H. HASSELBRING.

Cytology of Laboulbeniales.—As a sequence to his general introductory account[13] of the cytology of the Laboulbeniales, FAUL[14] has published a full account of the special morphology of two species, *Laboulbenia chaetophora* and *L. Gyrinidarum*. These two forms lack antheridia; therefore the study of them is not complicated by the question of fertilization by spermatia. The young procarp consists at first of the carpogonium, the trichophoric cell, and the trichogyne. The nucleus of the carpogonium and that of the trichophoric cell divide, and at about the same time the wall between the two cells disappears, so that the four nuclei come to lie in a single cell. The upper and lower ends of this cell are cut off as the "restored trichophoric cell" and the inferior supporting cell. Each of these contains a single nucleus. The two remaining nuclei undergo a series of conjugate divisions, as a result of which a superior supporting cell, and sometimes a secondary inferior supporting cell, each with two nuclei, are cut off. Two nuclei, presumably one derived from each nucleus of the original pair, remain in the parent cell or ascogonium. The ascogonium may either give rise to asci directly, thus itself becoming an ascogenous cell, or it may divide and give rise to two ascogenous cells. The only nuclear fusion in the life cycle of the plant is that which takes place in the ascus.—H. HASSELBRING.

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[12] GÜSSOW, H. T., Der Milchglanz der Obstbäume. Zeitschr. Pflanzenkrank. **22**:385–401. *figs. 1. pls. 2.* 1912.

[13] Rev. in BOT. GAZ. **54**:84. 1912.

[14] FAUL, J. H., The cytology of *Laboulbenia chaetophora* and *L. Gyrinidarum*. Ann. Botany **26**:325–355. *pls. 4.* 1912.

Mitochondria.—The literature on mitochondria is growing, but as it grows the difficulty in defining the structures becomes greater and greater. Just as centrosomes were followed by centrosome-like bodies and blepharoplasts by blepharoplastoids, the mitochondria are now followed by mitochondria-like structures. WOYCICKI[15] describes in the pollen mother cells and microspores of *Malva silvestris* mitochondria-like bodies, which first appear as small granules, then become vacuolate and divide by constriction, and finally disappear completely after the formation of the intine. Starch is entirely lacking during these stages, starch grains first appearing after the exine has become differentiated. The mitochondria-like bodies have nothing to do with leucoplasts or the formation of starch. In *Malva* they resemble somewhat the proteid vacuoles of Coniferales.

Improvements in technic have certainly brought to light some minute structures of the cell which were previously overlooked, but what these structures are and what their significance may be, are problems still awaiting solution.—CHARLES J. CHAMBERLAIN.

Wilting coefficient in alkali soils.—In a series of 14 alkali soils, graduated according to their salt content, KEARNEY[16] has shown the wilting coefficients to be practically identical, but the time required for the exhaustion of the water available for growth steadily increased with the increasing salt content. The plants were proportionately smaller when the wilting coefficient was reached in the soils of greater salt content, that is, the presence of alkali increased the quantity of water transpired in producing a unit weight of dry matter. With too great a quantity of salts, pathological conditions were evident in the plants and the wilting coefficient was not reached.—GEO. D. FULLER.

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[15] WOYCICKI, Z., Über die mitochondrienänliche Gebilde in den Gonotokonten und Gonen bei *Malva silvestris* L. Sitzungsber. Warschauer Gesell. Wiss. **5**:167–182. *pls. 1, 2.* 1912.

[16] KEARNEY, THOMAS H., The wilting coefficient for plants in alkali soils. Bur. Pl. Ind. Circ. **109.** pp. 9. 1913.